



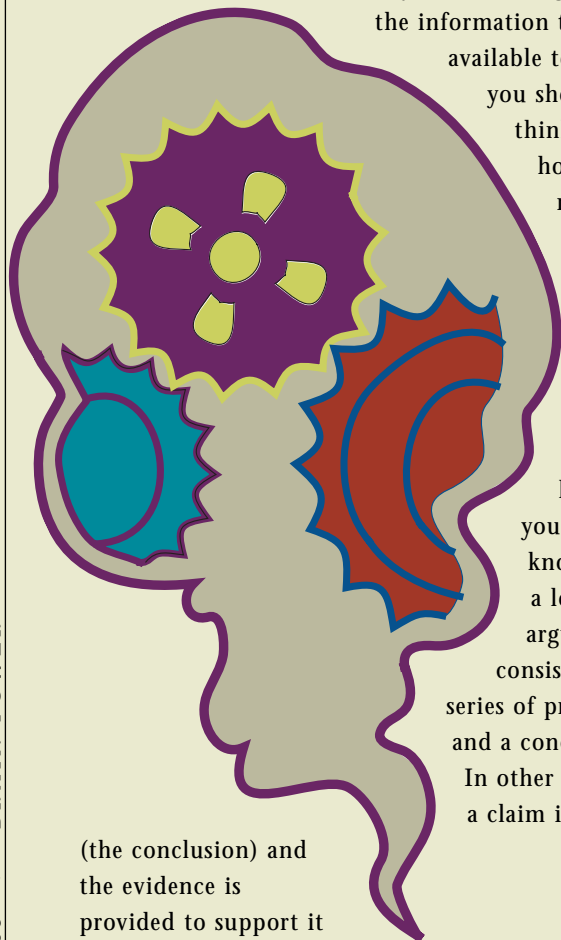
Tools to help you tease out fact from fiction

# Brain Power

BY JAMES KRIEGER

**T**here's a huge problem in strength training: everybody claims to have the best supplement, training machine, dietary regimen, training program, etc., etc., and yes, even the best magazine. And that leads us to the second biggest problem: how can you figure out what's a scam, what's marginal, and what's a gem? In true *Pure Power* fashion, this article isn't about trying to sell you something; rather it's about giving you the tools you need to excel. So although you won't get a comparison of training routines or diets, you'll get something infinitely more useful and result-producing—more powerful brain power.

LOGIC LESSON



As you sift through all of the information that's available to you, you should think about how it matches up to logic. In order to talk about logic, you need to know that a logical argument consists of a series of premises and a conclusion. In other words, a claim is made

(the conclusion) and the evidence is provided to support it (the premises). Here's an example: Mr. Olympia is the strongest and fittest man to walk the earth. Why? Because he's big, muscular, and lean. (I know what you're thinking; I'll get to that).

Now, there are two types of arguments: deductive and inductive. In a deductive argument, there's a bunch of evidence that fits together like a puzzle upon which a claim can be based. In an inductive argument, however, there's a claim for which evidence is sought out, which may or may not support the claim. Lawyers typically rely on inductive reasoning to determine "whodunit." Here are some examples:

**Deductive argument**

**Premise A:** The bench press is a part of all powerlifting competitions.

**Premise B:** The IPF Worlds is a powerlifting competition.

**Conclusion:** The bench press is a part of IPF World competition.

**Inductive argument**

**Premise A:** Most powerlifters wear belts during competition.

**Premise B:** Bob is a powerlifter.

**Conclusion:** Bob wears a belt during competition.

So these are the basics of logic, but you *must* recognize that this doesn't mean that the conclusion is *always* true (more on this later).

**SNIFFING OUT THE SCAM**

A fallacy is an error in reasoning. Here's an example of a deductive fallacy. Both premises are false, but the conclusion is true. It's a valid argument, but it isn't sound:

**Premise A:** All fish live in the ocean (false).

**Premise B:** Sea otters are fish (false).

**Conclusion:** Sea otters live in the ocean (true).

Inductive fallacies aren't quite as straightforward; the evidence doesn't provide enough support for the conclusion:

**Premise A:** Bob was killed in John's house.

**Premise B:** Bob was killed with John's kitchen knife.

**Conclusion:** John killed Bob.

The basics of logic seem pretty obvious, but there are numerous logical fallacies that people commit all the time without even recognizing them. Here's a list of common fallacies:

**1. Ad Hoc**

This is a special case explanation that doesn't apply to other situations.

PHOTO BY: SIOUX-Z. HARTWIG



IF YOU TRAIN LIKE HOSSEIN REZA ZADEH, YOU MIGHT END UP AS HAPPY AS HIM, BUT LIKELY NOT AS STRONG.

**Example:** “I got a cramp today while training. I knew I shouldn’t be taking creatine.”

“Well, didn’t you get cramps occasionally before you were taking creatine?”

“Err, umm, yes...but those were different.”

**Snag:** In this example, the special case explanation for your cramps is creatine. However, you’ve occasionally had cramps before. So how do you know that, in this special case, the cramps were due to creatine? You don’t, which makes it poor reasoning.

## 2. Anecdotal Evidence

Anecdotal evidence is basically word-of-mouth evidence, which is particularly common in strength training.

**Example:** “I started training like Olympic

weightlifting champion Reza Zadeh and put 15 kilos on my clean and jerk. That routine works!”

**Snag:** Anecdotal evidence is often in the form of “it worked for me.” The problem with it is that you can’t take the results from one person and apply them to everyone, even if Reza Zadeh is the champ and you gained from his training approach. There may be other reasons why “it worked for me”—and for him, for that matter. It’s likely that he brings a special set of genes to the equation, and maybe your expectation that the program would work made it work (the placebo effect), or maybe simply the change in approach is what caused the results.

## 3. Appeal to Tradition

This is the assumption that something is right because it’s old or traditional.

**Example:** “Bodybuilders have been using high reps for definition and isolation exercises for decades! It must work.”

**Snag:** Just because something has been done for a long time doesn’t mean it actually works or that there’s anything to it. Bodybuilders have been using high reps for years not because it actually works, but because they’ve heard that it works from other bodybuilders, and it gets passed down from one generation to the next. There’s a lot of truth in the old cliché that old habits die hard. And in this case research quite clearly shows that definition comes from a low-calorie diet and that there’s no such thing as “isolation training.”

## 4. Ad Hominem

This means “to the man.” It’s a personal attack on an individual rather than a criticism of the individual’s argument.

**Example:** “Dr. Johnson’s theory on muscle growth is bogus. He was accused of plagiarism, you know.”

**Snag:** In this case, whether or not Dr. Johnson has

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been accused of plagiarism has nothing to do with the validity of his theory. His theory stands or falls on the evidence that supports it, not on his status as a plagiarist.

### 5. Argumentum Ad Nauseam

This means that the more often you hear a statement, the more likely you are to accept it as true. For example, how many times have you heard that a diet high in protein will cause kidney damage? This has been repeated "ad nauseam" for years to the point where it's accepted as fact.

**Snag:** To date there's no scientific data that a diet high in protein will cause kidney damage in people with healthy kidneys. Just because this "fact" is out there and has been repeated "to nausea" doesn't make it true.

### 6. Appeal to Popularity

This refers to the idea that if a lot of people support a position, it's more likely to be correct.

**Example:** "I've got 8,000 guys in my gym who swear by my training program. How can our approach be wrong?"

**Snag:** It doesn't matter how many people believe in a training program...the number of people who believe in it doesn't necessarily relate to its effectiveness. Once upon a time, millions of people thought the earth was flat, but that didn't make it true, did it? The belief of a lot of people isn't solid evidence.

### 7. Appeal to Authority

This involves appealing to the prestige of an authority figure to support an argument.

**Example:** "I bought some of the new XXX-Huge Protein. Mr. Olympia says it's the best protein on the market and will increase my gains."

**Snag:** Note that it's not always inappropriate to quote an authority. But there's a big difference between quoting Mr. Olympia and quoting, say, Bill Kraemer, PhD, CSCS, a widely regarded expert in the field, when talking about hormonal responses to training. Bill Kraemer has done the research. It's unlikely that Mr. Olympia earned a doctorate in nutrition and researched XXX-Huge Protein.

### 8. Appeal to Emotion

This is when people's emotions are influenced to get them to believe a claim as true.

**Example:** “Don’t feel frustrated by lack of gains anymore! XX-Size Protein Powder can put slabs of muscle on even the skinniest of hard-gainers. Turn heads as you walk down the street.”

**Snag:** Here, the advertiser is appealing to the emotion of the hard-gainer, claiming that the protein powder will end frustration and add sex appeal. However, the advertiser has failed to provide any evidence that the protein powder will actually increase gains more than normal food and training alone.

### 9. Hasty Generalization

This means that you form a general rule by examining only a few isolated cases.

**Example:** “There are a few case reports of deaths related to ephedra use. Therefore, ephedra is dangerous and should be immediately pulled from the market.”

**Snag:** Hasty generalizations also occur when people extrapolate the results of research to an inappropriate population. For example, in the late 1980s, boron was being marketed as a testosterone booster to athletes. This was based on a study in which postmenopausal women, deficient in boron, were supplemented with boron and their testosterone levels increased. However, healthy athletes and boron-deficient postmenopausal women just aren’t the same thing and the early generalizations proved to be wrong; boron doesn’t increase testosterone in healthy male athletes. Too often results of studies are taken out of context.

### 10. Cum hoc ergo propter hoc

This means “With this, therefore because of this.” This refers to the assumption that if two events occur at the same time on a regular

basis, they must be causally related. However, correlation doesn’t always equal causation.

**Example:** “Look how big all the top shot-putters are. Shot-putting must make you huge.”

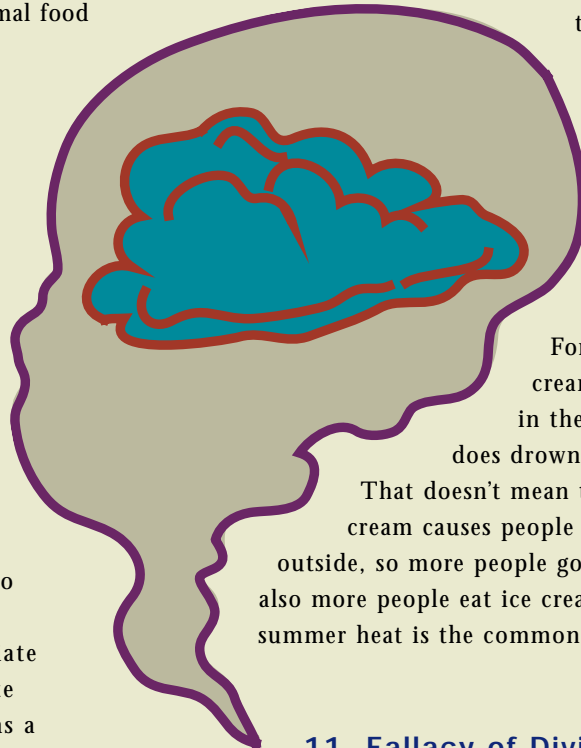
**Snag:** Huge guys tend to be successful shot-putters. It’s not the shot-putting that makes them big...they are big...they are big in the

first place, which puts them in a better position to become successful.

Another version of this fallacy includes ignoring a common cause.

For example, ice cream intake goes up in the summer, and so does drowning incidence.

That doesn’t mean that eating ice cream causes people to drown. It’s hot outside, so more people go swimming and also more people eat ice cream. Thus, the summer heat is the common cause.



### 11. Fallacy of Division

This refers to the assumption that if an object has a certain characteristic, its parts will also have that characteristic, or if a group of objects has a certain characteristic, each object will have that same characteristic.

**Example:** “Who needs squats? Just do leg extensions, leg curls, and back extensions and you’ll get practically the same benefits.”

**Snag:** In this case, the whole is really different from the sum of the parts. Even though you’re working the same muscle groups by doing these exercises, this doesn’t mean you’ll get the same effect that you would from doing squats.

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### 12. Non Sequitur

This means “it doesn’t follow.” The conclusions don’t draw from the premises.

**Example:** “Since amino acids are important building blocks for muscle, eating more amino acids will build more muscle.”

**Snag:** Sure, amino acids are important building blocks for muscle. However, this premise doesn’t support the conclusion that eating more amino acids will build more muscle. If that were true, all you would need to do is eat tons of protein all the time and you’d be huge. Obviously there’s more to the huge equation than just aminos.

### 13. Post Hoc Ergo Propter Hoc

This means, “After this, therefore because of this.” It refers to the assumption that something caused an event simply because it happened before that event. This is similar to fallacy #10, but it isn’t exactly the same. In #10, we assume two events caused each other because they happen at the same time on a regular basis. In this one, we assume one event caused another because one happened before the other one.

**Example:** “Working out causes a surge in growth hormone. Later, your muscles start to build new proteins. This surge in growth hormone is one of the factors causing your muscles to grow in response to a workout.”

**Snag:** Here, it’s assumed that, since working out causes growth hormone release, which is followed by increased muscle protein synthesis, the growth hormone must be causing the increased protein synthesis. This seems logical since growth hormone can affect protein synthesis. However, to date no one has established a causal relationship between the two. You might eat your favorite cereal and then later hit two home runs, but that doesn’t mean the cereal caused you to hit the home runs.

### 14. Slippery Slope

This is the assertion that if one event occurs, other harmful events will follow.

**Example:** “Creatine use should be banned. If we don’t ban it, athletes who use creatine will be tempted to try bigger and better things and eventually will start using anabolic steroids in their quest for improved performance.”

**Snag:** Here, the claim is that if we don’t ban creatine, everything will

slide down a “slippery slope” and all kinds of awful things will happen. However, there’s no evidence provided to support the claim that creatine use actually leads to eventual steroid use. This is a perfect case of blowing things out of proportion.

## 15. Straw Man

This is when you distort an argument so that it’s easier to attack.

However, you’re not dealing with the argument that was made; instead, you’re “beating up a straw man.”

**Example:** “Dr. Johnson wants warning labels put on ephedra supplements. I can’t believe he wants to limit our freedom to use ephedra.”

**Snag:** Just because Dr. Johnson wants warning labels put on ephedra supplements doesn’t mean he wants to limit the freedom to use it. Here, the “straw man” is the distortion of Dr. Johnson’s position to make it look like he wants to limit people’s freedom to use ephedra.

## ARMED FOR BATTLE

These aren’t all the fallacies that occur in arguments, but they’re the most common. Hopefully, I’ve given you some tools that’ll help you think more critically about claims you encounter in the world of strength and power. If you’re interested in learning more about logic, common fallacies, and how to apply

these concepts to your life, I highly recommend *Think to Win: The Power of Logic in Everyday Life* by Salvator Cannavo, PhD.<sup>1</sup> 📖

### REFERENCE

1. Cannavo, S. *Think to Win: The Power of Logic in Everyday Life*. Amherst, NY: Prometheus Books, 1998.

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